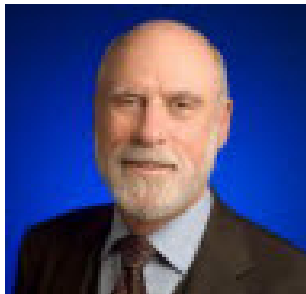


# Internet's Future Social Implications: Upheaval or “Trek’s” Promise

## Political, Economic, Social and Technical Impacts of the Internet



Vint Cerf

VP and Chief Internet Evangelist, Google  
ACM President



Stu Feldman

VP – Engineering, Google  
Former ACM President

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*908.5 Million*

*(<ftp.isc.org/www/survey/reports/current/>  
Sep 2012)*

*2.405 Billion Users*

*(InternetWorldStats.com, Jun 30, 2012)*

*(approx. 6.5 B mobiles and >1.5 Billion PCs)*

Region	Internet Population	% penetration
Asia	1,070 Mil.	27.5 %
Europe	518.5 Mil.	63.2%
North Am.	273.8 Mil.	78.6 %
LATAM/C	254.9 Mil.	42.9 %
Mid-East	90.0 Mil.	40.2 %
Oceania/Aus	24.3 Mil.	67.6 %
Africa	167.3 Mil.	15.6 %
TOTAL	2,405.5 Mil.	34.3%

- IPv6 - in parallel with IPv4 [IPv6 World Launch 6/6/2012]
- Internationalized Domain Names
- New gTLDs (2000 applications)
- Domain Name System Security (DNSSEC)
- Digitally-Signed Address Registration (RPKI)
- Sensor Networks
- Smart Grid
- Mobile Devices

# Internet-enabled Devices







# Woodhurst sensor net

2008-09-21 4:16:38 pm EDT

[Help on this Page](#)  
[How to Build this Page](#)

## Home

## Setup

- Server
- Routers
- Nodes
- Software Update

## System and Network

- Connectivity
- Energy
- Traffic
- Reliability

## Sensing and Control

- Sensor/Actuator Devices
- Sensor Data Analysis
- Actuator Control
- Data Export

## Support

- User Guide
- Network Admin Guide
- Developer Guide

I wish this page would...

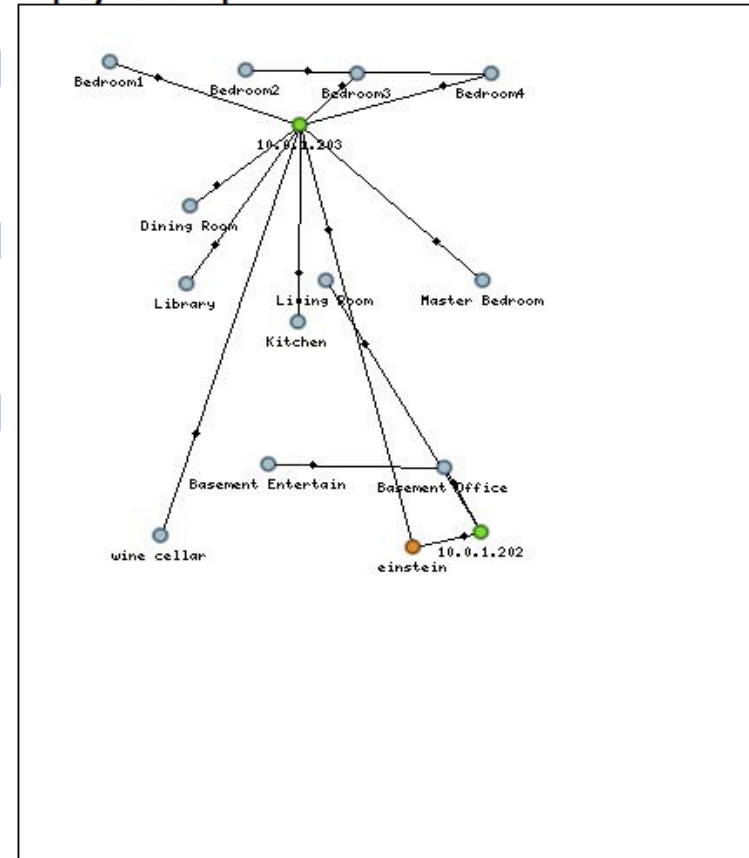
© 2006-2008 Arch Rock Corporation.  
All Rights Reserved.

## Home

- Server
- Router
- Node
- Missing Router or Node

Deployment started on 2008-07-11 12:35:48 pm EDT, running for 72d 3h 40m 51s.

## Deployment Map



## Network Devices

15 Devices

**einstein**

**10.0.1.202**

4:15:01 pm

**10.0.1.203**

4:15:00 pm

### 1st Floor

**Dining Room**

4:15:05 pm

71 °F 55.3 % 10 lux 1 lux

**Kitchen**

4:12:03 pm

72.9 °F 51 % 21 lux 1 lux

**Library**

4:12:35 pm

73.3 °F 50.1 % 10 lux 0 lux

**Living Room**

4:14:57 pm

70.4 °F 51.5 % 7 lux 0 lux

**Master Bedroom**

4:15:13 pm

70.1 °F 56 % 14 lux 2 lux

### 2nd Floor

**Bedroom1**

4:12:14 pm

74 °F 48 % 14 lux 1 lux

**Bedroom2**

4:15:10 pm

74.4 °F 49 % 80 lux 17 lux

**Bedroom3**

4:15:12 pm

73.5 °F 47.9 % 14 lux 1 lux

**Bedroom4**

4:15:06 pm

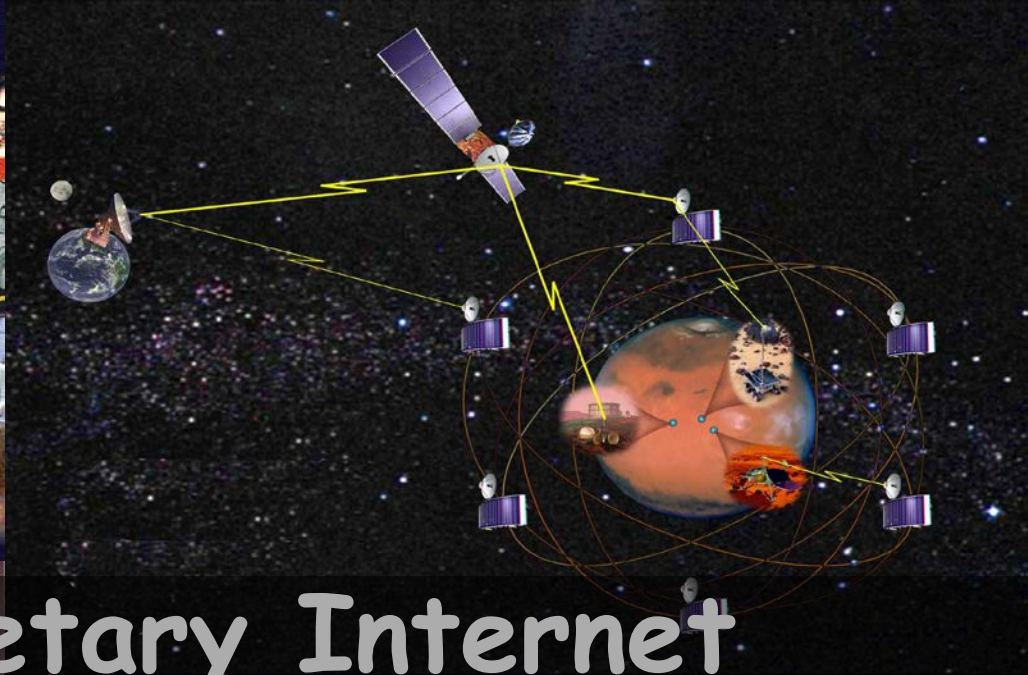
70.7 °F 56.7 % 3 lux 0 lux



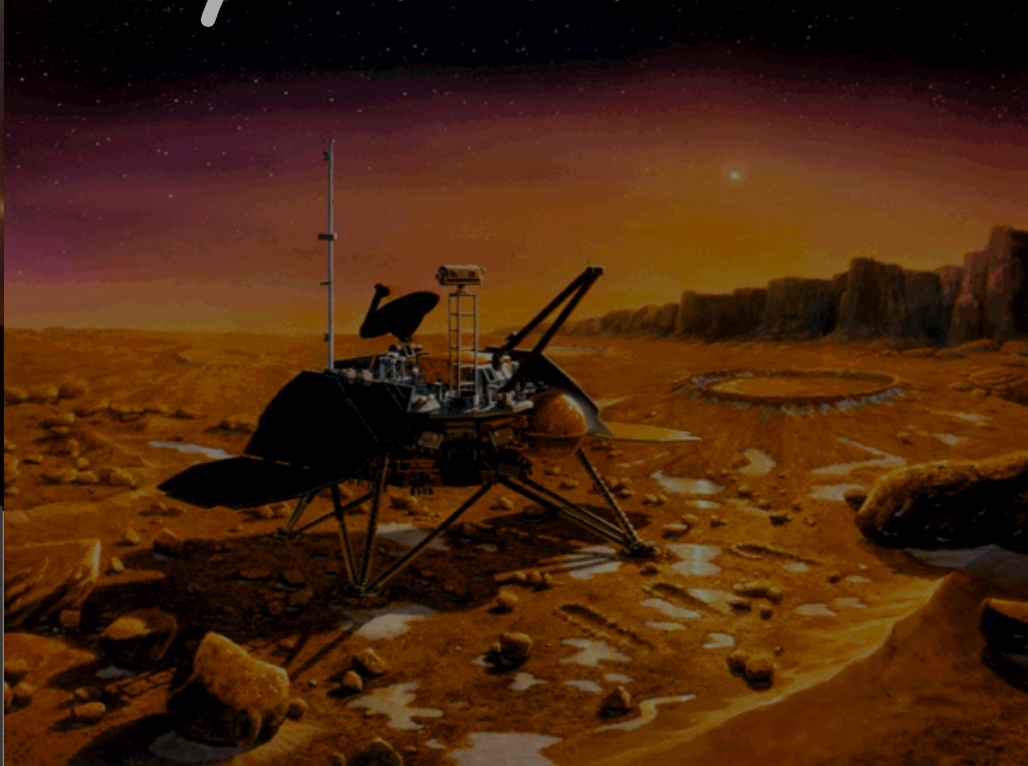
- Smart Grid Interoperability Panel (SGIP)
- SEP 2.0 (Smart Energy Profile)
- Configuration, Control, Reporting
- Safety and Security
- Consumption vs Production
  - Solar, generators, wind, electric vehicles
- User settings?
- Multiple receivers of information? (Analytics)

- Internet Governance Forum
- International Telecommunication Union (ITU)
  - World Telecommunication Standardization Assembly (WTSA)
  - World Conference on International Telecommunications (WCIT) – International Telecommunication Regulations
- Privacy, Safety (vs security)
  - Cyber Fire Department (civilian infrastructure)
  - Anonymity and strong authentication
- The legal meaning/weight of digital signatures
- Intellectual Property (copyright, patents esp. software)
- Digital Vellum (preservation of data and software)

- The economics of publishing (atoms to bits)
- The economics of journalism (tomes to snippets)
- The economics of education (blackboards to MOOCs)
- The economics of manufacturing (3D printers)



# InterPlaNetary Internet





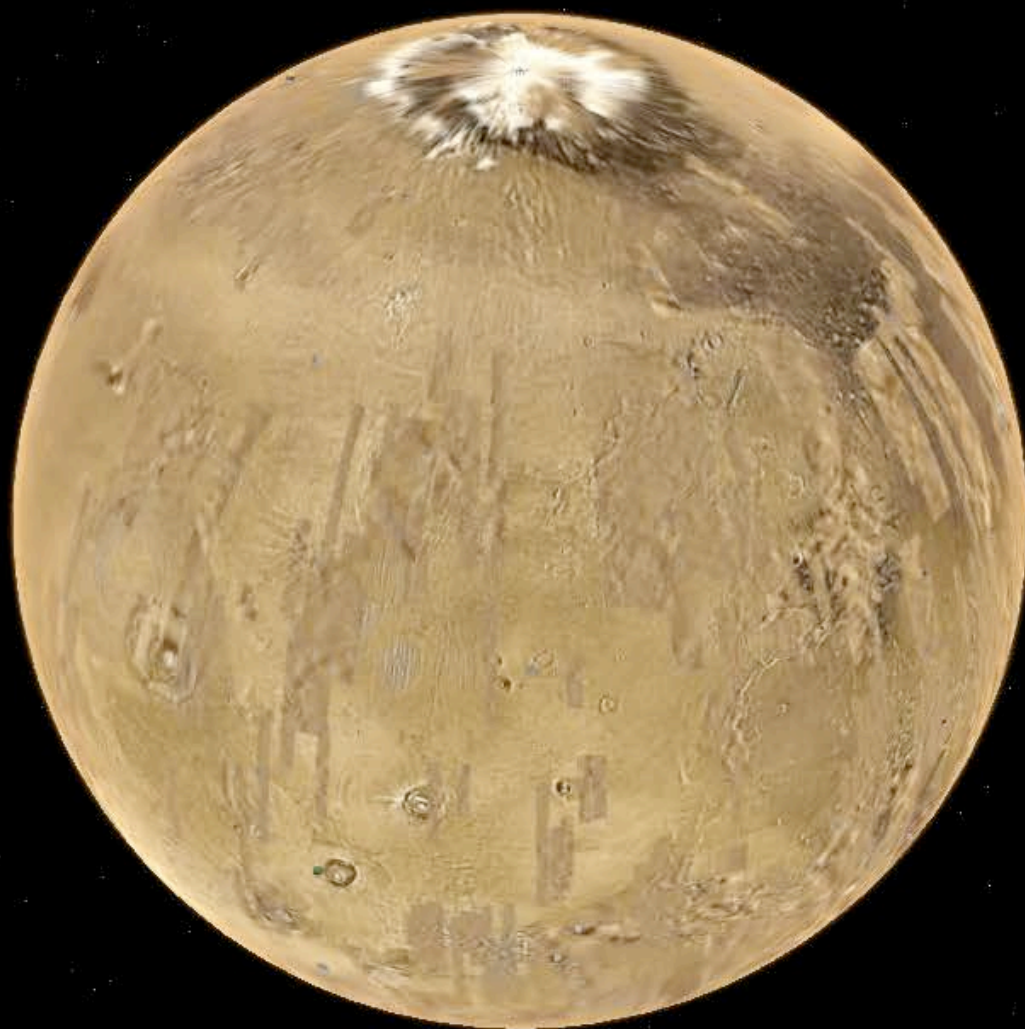
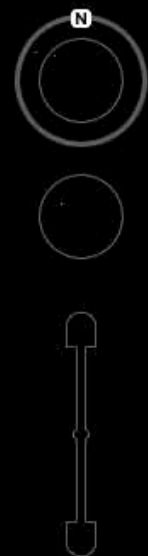
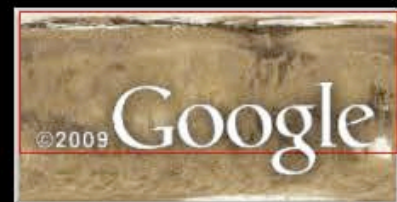
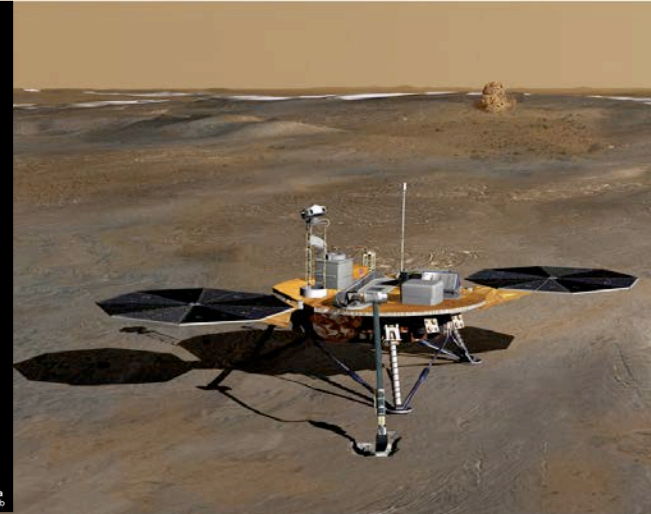
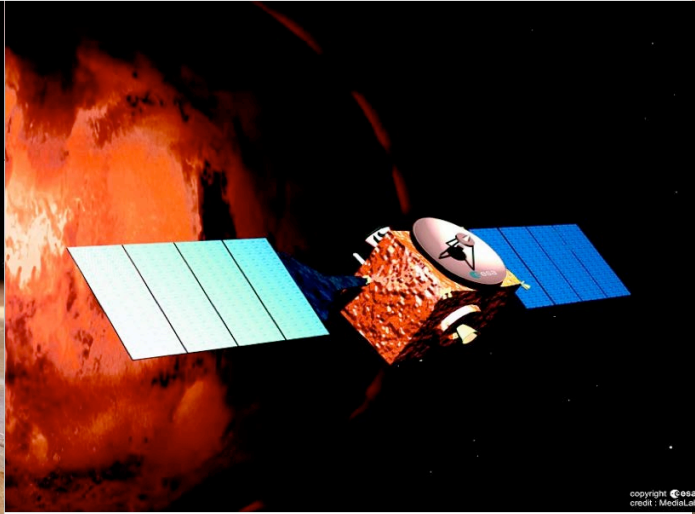
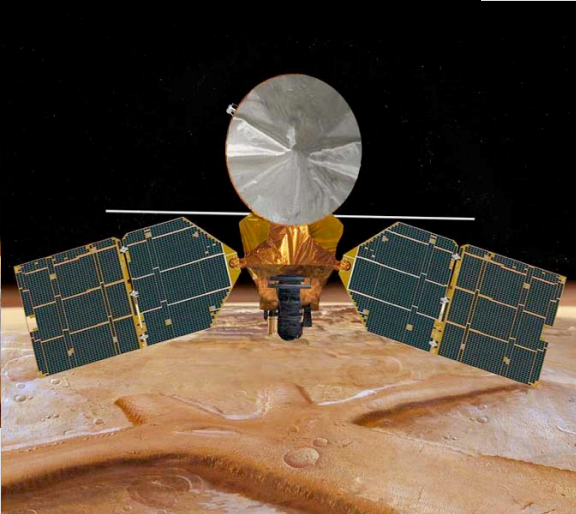


Image NASA / USGS  
ESA / DLR / FU Berlin (G.Neukum)

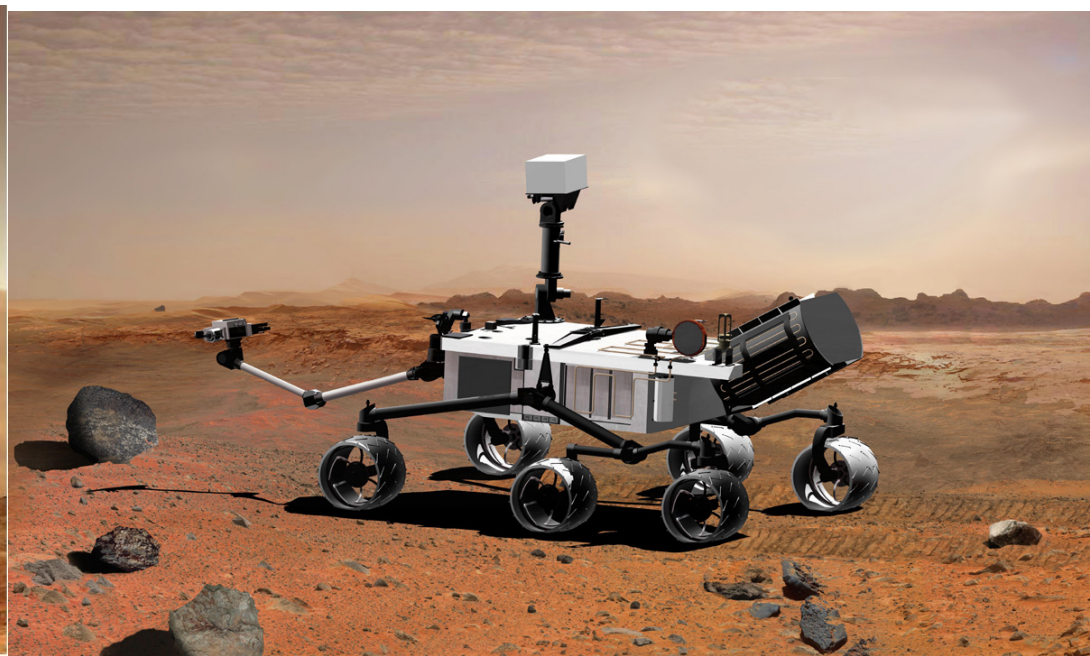
38°57'34.00" N 95°15'55.87" W elev 422 m



Eye alt 11001.42 km



*MARS RECONAISSANCE ORBITER, MARS EXPRESS,  
PHOENIX, MARS ROVERS, MARS SCIENCE LABORATORY*



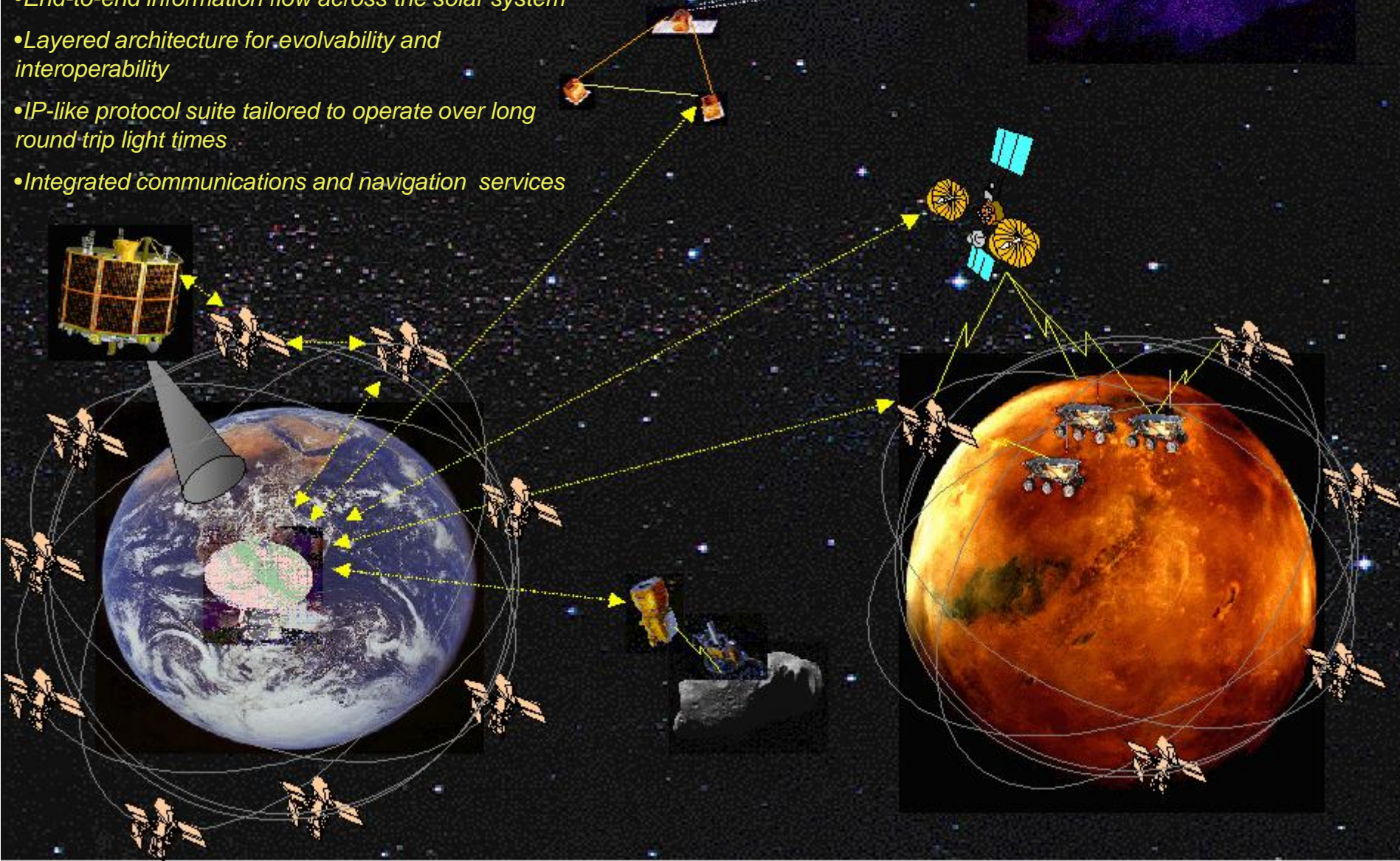




# Interplanetary Internet



- End-to-end information flow across the solar system
- Layered architecture for evolvability and interoperability
- IP-like protocol suite tailored to operate over long round-trip light times
- Integrated communications and navigation services





# Next Stop: Alpha Centauri (DARPA 100YSS)



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